REMARKS / ARGUMENTS

The present application includes pending claims 1-23, all of which have been rejected. The Applicant respectfully submits that all the claims define patentable subject matter.

Claims 1-2, 5-8, 11-13, 18-19 and 22-23 were rejected under 35 U.S.C. 102(e) as being anticipated by Kim et U.S. Patent No 7,155,180 B2 ("Kim"). Claims 3-4, 9-10, 14-17 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Chien U.S. Pub No 2004/0203472 A1 ("Chien"). The Applicant respectfully traverses these rejections at least based on the following remarks:

I. REJECTION UNDER 35 U.S.C. § 102

With regard to the anticipation rejections under 102(e), MPEP 2131 states that:

> "[a] claim is anticipated only if **each and every element** as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *See* Manual of Patent Examining Procedure (MPEP) at 2131 (internal citation omitted) (emphasis added). Furthermore, "[t]he identical invention must be shown in as complete detail as is contained in the ... claim." *See* id. (internal citation omitted).

A. Kim Does Not Anticipate Claims 1-2, 5-8, 11-13, 18-19 and 22-23

The Applicant first turns to the rejection of claims 1-2, 5-8, 11-13, 18-19 and 22-23 under 35 U.S.C. 102(e) as being anticipated by Kim U.S. Patent No

7,155,180 B2.

A(1) Arguments To Rejections Of Claims 1, 7 and 18

With respect to independent claims 1, 7 and 8, the Examiner in page 2 of the Office Action states:

> "Kim et al teaches a method for measuring IQ path mismatch in transceivers, the method comprising: estimating a transmitter IQ mismatch in a form of gain and phase response for transmitter I and Q paths sharing a receiver path (see fig.9 element TX and col.2, lines 59-67 and col.3, lines 35-40 and col.6, lines 9-35 and col.10,lines 35-59); and estimating a receiver IQ mismatch in a form of gain and phase response for receiver I and Q paths sharing a signal source .(see fig.9 element RX and col.2, lines 59-67 and col.3, lines 35-40 and col.6, lines 9-35 and co1.10,lines 35-59)."

The Applicant respectfully submits that Kim does not teach or disclose "A method for **measuring IQ path mismatch in transceivers**, the method comprising: estimating a **transmitter IQ mismatch** in a form of **gain and phase response for transmitter I and Q paths sharing a receiver path**; and **estimating a receiver IQ mismatch** in a form of gain and phase response **for receiver I and Q paths sharing a signal source**" as recited in the Applicant's claim 1.

Firstly, the Applicant submits that Kim teaches "**spurious rejection by using mismatch compensation**" in a "**transmitter**" is different than the Applicant's teaching of "**measuring IQ path mismatch in transceivers**", where the Applicant teaches a transceiver comprises both a transmitter and a receiver

that Kim does not teach. Specifically Kim's abstract states such a deficiency:

> "A mixer circuit with improving characteristic of image rejection by compensating mismatch in a **spurious rejection** mixer circuit (SRM) used in a **transmitter** is provided."

Therefore, the Applicant submits that Kim's transmitter architecture without "a receiver" (see Kim FIG 3 and abstract) cannot teach "estimating a transmitter IQ mismatch in a form of gain and phase response for transmitter I and Q paths **sharing a receiver path**; and estimating a receiver IQ mismatch in a form of gain and phase response **for receiver I and Q paths sharing a signal source**" as recited in the Applicant's claim 1.

Secondly, the Applicant submits that Kim does not teach "estimating a **transmitter IQ mismatch**" where the IQ signals are sampled **directly** from the transmitter IQ path. Instead, Kim teaches **down-converting an up-converted RF signal at the transmitter output**, and **generating IQ components from the down-converted signal** for IQ phase gain mismatch compensation. Specifically, Kim in FIG 3 and in abstract teaches:

> "The mixer circuit according to the present invention comprises an **up conversion unit for modulating a base-band input signal to a RF signal**, a **down conversion** unit for converting an output signal **from the up conversion unit to a base-band output signal**, mismatch estimating means for **determining a mismatch compensation value** by which spurious component in an output signal from the down conversion unit is minimized, wherein **the spurious component results from mismatch in the up conversion unit**, and mismatch compensating means for compensating the mismatch in

> the up conversion unit by using the mismatch compensation value determined by the mismatch estimating means."

Therefore, the Applicant submits that Kim does not teach "**estimating** a **transmitter IQ mismatch** in a form of **gain and phase response for transmitter I and Q paths sharing a receiver path**" as recited in claim 1 by the Applicant.

Thirdly, the Applicant submits that in view of the deficiency of a receiver in Kim's teaching, Kim cannot teach "**estimating a receiver IQ mismatch** in a form of gain and phase response **for receiver I and Q paths sharing a signal source**" as recited in claim 1 by the Applicant. Kim's abstract and FIG 3 specifically teaches "compensating mismatch in a SRM used in a **transmitter**".

Based on the above rationale, the Applicant respectfully submits since Kim does not teach "A method for **measuring IQ path mismatch in transceivers**, the method comprising: estimating a **transmitter IQ mismatch** in a form of **gain and phase response for transmitter I and Q paths sharing a receiver path**; and **estimating a receiver IQ mismatch** in a form of gain and phase response **for receiver I and Q paths sharing a signal source**" as recited in claim 1 by the Applicant, claim 1 is not anticipated by Kim and is allowable.

Likewise, independent claims claim 7 and 18 are system claims similar in many respects to the method disclosed in independent claim 1. Therefore, the Applicant submits that independent claims 7 and 18 are also allowable at least

for the reasons stated above with regard to claim 1.

Therefore, the Applicant respectfully requests that the rejections of claims 1, 7 and 18 be withdrawn. Furthermore, the Applicant also reserves the right to argue additional reasons beyond those set forth above to support the allowability of claims 1, 7 and 18 should such a need arise.

A(2) Arguments To Rejections Of Claims 2, 8 and 19

With respect to dependent claims 2, 8 and 19, the Applicant has already established arguments in subsection A(1) that Kim does not teach or disclose "**a receiver**" and also does not teach "estimating a **transmitter IQ mismatch** in a form of gain and phase response for **transmitter IQ paths sharing a receiver path**", in claims 1, 7 and 18. Consequently, Kim therefore cannot teach "measuring a difference in the gain and phase response between the **transmitter I and Q paths** and between the **receiver I and Q paths**" as recited in claims 2, 8 and 19 by the Applicant.

In addition, dependent claims 2, 8 and 19 respectively depend from independent claims 1, 7 and 18 and are allowable for at least the same rationale as discussed above for the independent claims 1, 7 and 18. Accordingly, the Applicant respectfully submits that dependent claims 2, 8 and 19 are also allowable. The Applicant reserves the right to argue additional reasons beyond

those set forth herein to support the allowability of dependent claims 2, 8 and 19 should such a need arise.

A(3) Arguments To Rejections Of Claims 5-6, 11-12, and 22-23 Based On Inherency

The Office Action on page 3 states the following:

> "As per claims 5, 11 and 22, Kim et al inherently teaches compensating for the difference of the transmitter and receiver I and Q paths using a digital FIR filter (see col.10, lines 25-26).
> As per claims 6, 12 and 23, Kim et al inherently teaches utilizing iterative estimation for filter tap parameters during the compensating (see col.10, lines 23-26)."

Firstly, the Applicant submits that Kim teaches "estimating coefficients about frequencies in a digital filter" **without** specifying "using a digital FIR filter" or "utilizing iterative estimation for filter tap parameters during the compensating". Specifically, Kim in col 10 lines 17-26 teaches:

> "Next, it compensates gain and phase by using estimated gain mismatch and phase mismatch. In case of an embodiment shown in FIG. ***8b,*** the input signal Iin is transmitted as the Output signal Iout as it is, and a signal generated by adding the input signal Iin passed a filter and the input signal Qin passed a filter. Preferably, the filter and the filter are filters that have coefficients 1,1, . . . N and 1,2, . . . N, about selected frequencies fl, f2, . . . m, respectively. In this embodiment, the mismatch compensating means is embodied to a digital filter, in digital domain."

Therefore, the Applicant submits that Kim does not suggest or teach "using a digital FIR filter" or "utilizing iterative estimation for filter tap parameters

during the compensating". The Applicant accordingly submits that simply asserting "Inherency" as a basis for rejection to claims 5-6, 11-12 and 22-23 without evidence to suggest the teaching lacks merit.

Secondly, regarding **INHERENCY,** regardless of whether this statement is true or not, the Applicant submits that a rejection based on inherency must include a statement of the rationale or evidence tending to show inherency. *See* Manual of Patent Examining Procedure at § 2112. "The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic." *See id. citing In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

> To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. **Inherency, however, may not be established by probabilities or possibilities.** The mere fact that a certain thing may result from a given set of circumstances is not sufficient."

In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). The Applicant respectfully submits that neither Kim itself nor the Office Action "make[s] clear that the missing descriptive matter," said to be inherent "is necessarily present in" Kim.

A rejection based on inherency must be based on factual or technical reasoning:

> In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teaching of the applied prior art.

Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990).

The Applicant respectfully submits that the Office Action does not contain a basis in fact and/or technical reasoning to support the rejection based on inherency. Instead, as recited above, at least claims 5-6, 11-12 and 22-23 of the present application stands rejected based on a conclusory statement of inherency, rather than upon a "basis in fact and/or technical reasoning." Accordingly, the Applicant respectfully submits that, absent a "basis in fact and/or technical reasoning" for the rejection of record, that rejection to claims 5-6, 11-12 and 22-23 should be reconsidered and withdrawn.

Furthermore, with respect to dependent claims 5, 6, 11-13 and 22-23, the Applicant has already established arguments in subsection A(1) that Kim does not teach or disclose "**a receiver**" and also does not teach "estimating a **transmitter IQ mismatch** in a form of gain and phase response for **transmitter IQ paths sharing a receiver path**" in claims 1, 7 and 18. Dependent claims 5-6, 11-13 and 22-23 respectively depend directly or indirectly from independent

claims 1, 7 and 18 and are allowable for at least the same rationale as discussed above for the independent claims 1, 7 and 18. Accordingly, the Applicant respectfully submits that dependent claims 5-6, 11-13 and 22-23 are also allowable. The Applicant reserves the right to argue additional reasons beyond those set forth herein to support the allowability of dependent claims 5-6, 11-13 and 22-23 should such a need arise.

II. REJECTION UNDER 35 U.S.C. § 103

In order for a *prima facie* case of obviousness to be established, the Manual of Patent Examining Procedure ("MPEP") states the following:

> "First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine the teaching. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure."

See MPEP at § 2142, citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (emphasis added). Further, MPEP § 2143.01 states that "the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art suggests the desirability of the combination," and that "although a prior art device 'may be capable of being modified to run the way the apparatus is claimed, there must be *a suggestion or motivation in the reference* to do so'" (citing In re Mills, 916 F.2d 680, 16 USPQ 2d 1430 (Fed. Cir. 1990)). Moreover, MPEP § 2143.01 also states that the level of ordinary skill in the art cannot be relied upon to provide the suggestion...," citing Al-Site Corp. v. VSI Int'l Inc., 174 F.3d 1308, 50 USPQ 2d 1161 (Fed. Cir. 1999). Additionally, if a *prima facie* case of obviousness is not established, the Applicant is under no obligation to submit evidence of nonobviousness.

> The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.

See MPEP at § 2142.

B. The Proposed Combination Of Kim And Chien Does Not Render Claims 3-4, 9-10, 14-17 and 20-21 Unpatentable

The Applicant turns to the rejection of claims 3-4, 9-10, 14-17 and 20-21 by the Examiner under 35 U.S.C. § 103(a) as being unpatentable over Kim in view of Chien US Pub. No 2004/0203472A1 (hereafter Chien). On pages 3 to 5 of the Office Action, the Examiner looks to Chien for the missing limitations to reject the Applicant's claims 3-4, 9-10, 14-17 and 20-21. The Applicant respectfully traverses the rejections based on the following reasons.

Firstly, the Applicant has already established arguments in subsection A(1) that Kim does not teach or disclose at least "A method for **measuring IQ path mismatch in transceivers**, the method comprising: estimating a **transmitter IQ mismatch** in a form of **gain and phase response for transmitter I and Q paths sharing a receiver path**; and **estimating a receiver IQ mismatch** in a form of gain and phase response **for receiver I and Q paths sharing a signal source**" as recited in claims 1, 7 and 18 by the Applicant.

Secondly, the Applicant had already established arguments in a previous reply to the Office Action dated May 21, 2007 that Chien does not anticipate the recited independent claims 1, 7 and 18 by the Applicant.

Thirdly, the Applicant submits that combining Kim and Chien does not teach each and every element or limitation of recited independent claims 1, 7 and 18 by the Applicant, and the Applicant notes that the Examiner did not make such assertion in the pending Office Action.

Therefore, based on at least the above reasons, the Applicant submits that dependent claims 3-4, 9-10, 14-17 and 20-21 respectively depend directly or indirectly from independent claims 1, 7 and 18 and are allowable for at least the rationale that Kim and Chien combined does not teach each and every element or limitation as recited in the independent claims 1, 7 and 18. Accordingly, the Applicant respectfully requests that dependent claims 3-4, 9-10, 14-17 and 20-21 are also allowable at least for the same rationale established in independent claims 1, 7 and 18.

The Applicant respectfully requests that the rejection of dependent claims 3-4, 9-10, 14-17 and 20-21 under 35 U.S.C. § 103(a) be withdrawn. Furthermore, The Applicant reserves the right to argue additional reasons beyond those set forth herein to support the allowability of dependent claims 3-4, 9-10, 14-17 and 20-21 should such a need arise.

CONCLUSION

Based on at least the foregoing, the Applicant believes that all pending claims 1-23 are in condition for allowance. If the Examiner disagrees, the Applicant respectfully requests a telephone interview, and requests that the Examiner telephone the undersigned Attorney at (312) 775-8093.

The Commissioner is hereby authorized to charge any additional fees or credit any overpayment to the deposit account of McAndrews, Held & Malloy, Ltd., Account No. 13-0017.

A Notice of Allowability is courteously solicited.

Respectfully submitted,

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